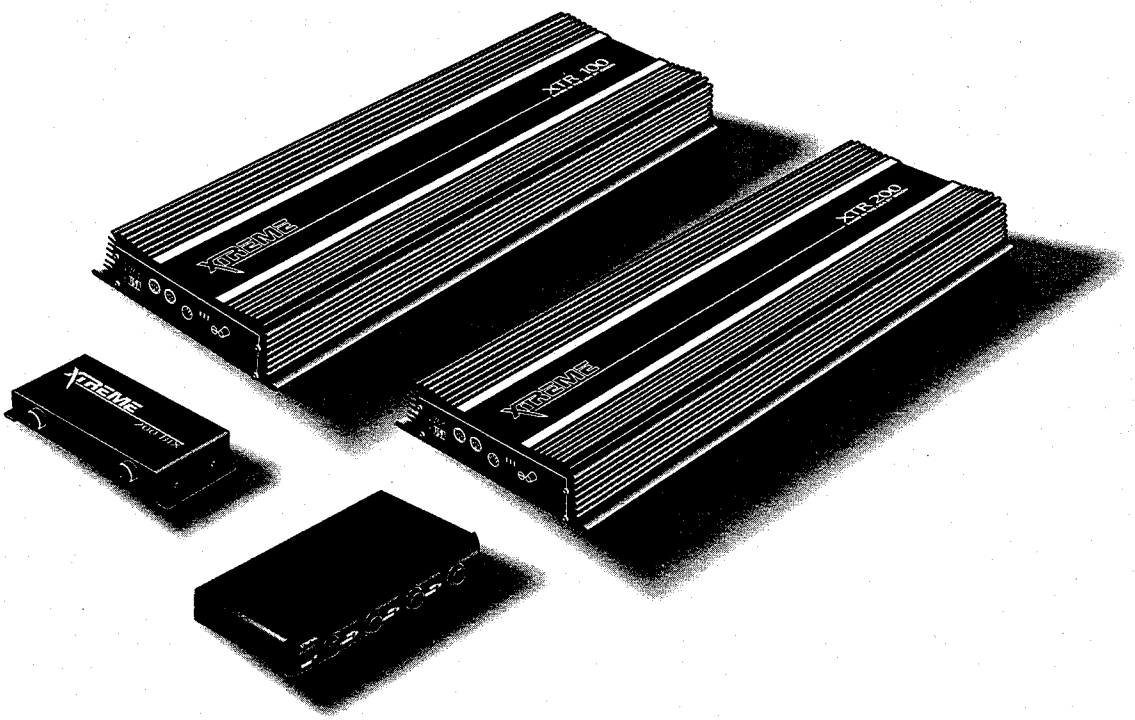
INSTALLATION MANUAL

Orion XTR Series

POWER AMPLIFIERS



ORION

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INTRODUCTION

Introducing a completely new line of two amplifiers, an active crossover and a preamp. Using only superior components and introducing technology new to the automotive industry, the XTREME line offers unsurpassed performance without compromising musical integrity.

In the professional world of sound reinforcement, the most commonly used means of moving a signal from one place to another is with balanced audio cables. A balanced audio cable has two twisted wires surrounded by a shield. The signals on the twisted wire are 180 degrees out of phase from each other and have equal magnitude. The balanced cable is the key to total immunity from radiated noise in a car audio system. All induced noise cancels out due to the amplifier only seeing the difference of signals, and rejecting the common one. This in turn increases the total signal-to-noise ratio by 10 dB or better. All XTREME series products have balanced inputs and outputs using mini XLR-type connectors.

Dual MOSFET power supplies provide more than ample power for the most demanding musical passages.

Throughout the design of all XTREME products, absolutely none of the components used in construction have been compromised because of cost, only the premier, state of the art parts are used.

All XTR Series amplifiers contain the following built-in features:

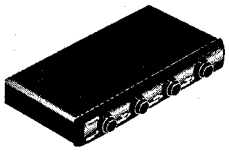
- Full frequency, Bi-Polar, Class AB output for full, clean reproduction at all frequencies without any compromise.
- Localized Feedback Design for extremely fast transient response and reduction of harmonic and intermodulation distortion.
- Parallel Balanced inputs and DIN inputs provide considerable versatility for interconnections.
- Each amplifier contains a ±15 volt power supply which provides phantom power for Orion accessories. This ensures maximum dynamic performance from all accessories. Power supplies are protected against low voltage or excessive current.
- Bridging capabilities for mono and mixed mono installations.
- A single variable input sensitivity control with left and right channel peak indicators for precise level matching of head unit outputs to amplifier inputs.
- 6 Hz rumble filter to eliminate any inaudible DC offset.
- FET switched 40 dB audio attenuator to reduce turn-on/turn-off "thump".
- Massive aluminum heat sink for efficient dissipation of heat.
- A wide variety of accessories are available for flexibility in designing overall audio systems.
- Left and right peak indicators. Used in conjunction with the input sensitivity control to match the amplifier's peak output to the peak coming from the head unit.

DESCRIPTIONS

ORION 200 BIX
XTREME SERIES CROSSOVER

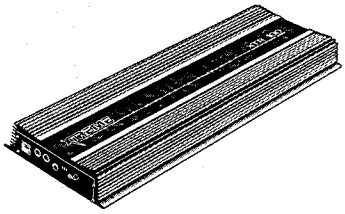
The XTREME two-way crossover employs a 12 dB per octave slope and has independent, continually adjustable crossover points from 50Hz to 5kHz. The crossover has its own internal power supply, balanced inputs and outputs, a signal-to-noise ratio of 110 dB and extremely low THD figures.

ORION 300 BIQ
XTREME SERIES PREAMPLIFIER



The XTREME preamp features three equalizer controls with adjustable frequency centers and total boost of 12 dB. The preamp also has a volume control and dual inputs for more than one source. Both inputs have RCA type connectors and the primary input also offers balanced XLR connectors. A high efficiency switching power supply produces the bipolar 15 volts required to drive the high signal level, which further reduces system noise.

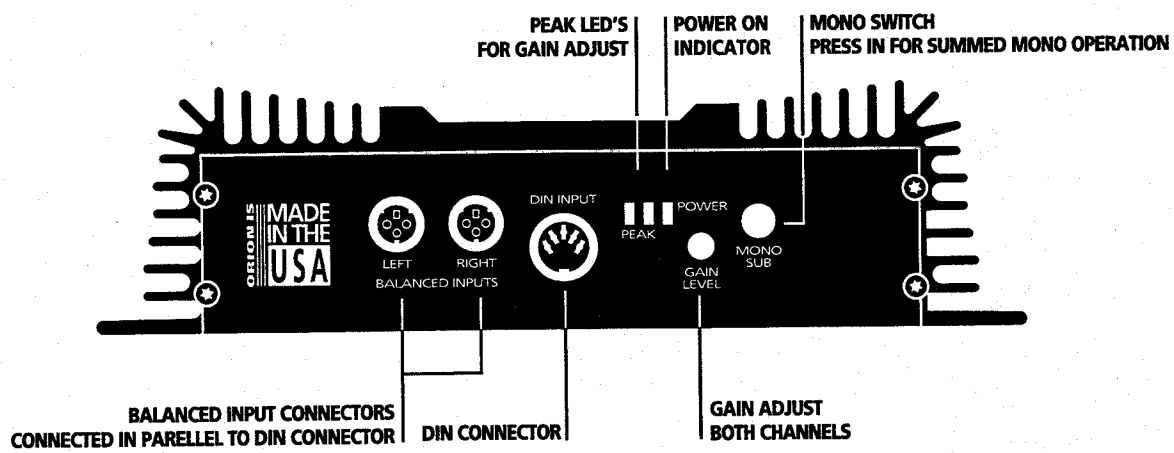
ORION XTR 100, 200
STEREO POWER AMPLIFIER



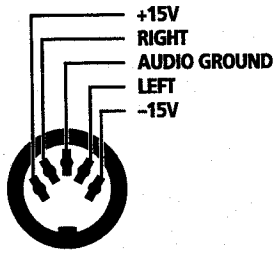
Two new XTREME amplifiers round off the line. Both the XTREME 100 and XTREME 200 have balanced inputs and a standard DIN type input for any Orion accessory. The two models also share peak signal indicators, a mono summing switch, and a gain control that regulates both channels.

A completely new design in output topology has vastly increased rise time, thus improving overall bandwidth and stability. A new design in the output section uses large multiple output transistors to improve overall reliability. Low impedance high current filter capacitors in the power supply greatly improve transient response while lowering the overall signal to noise ratio.

INPUT PLATE

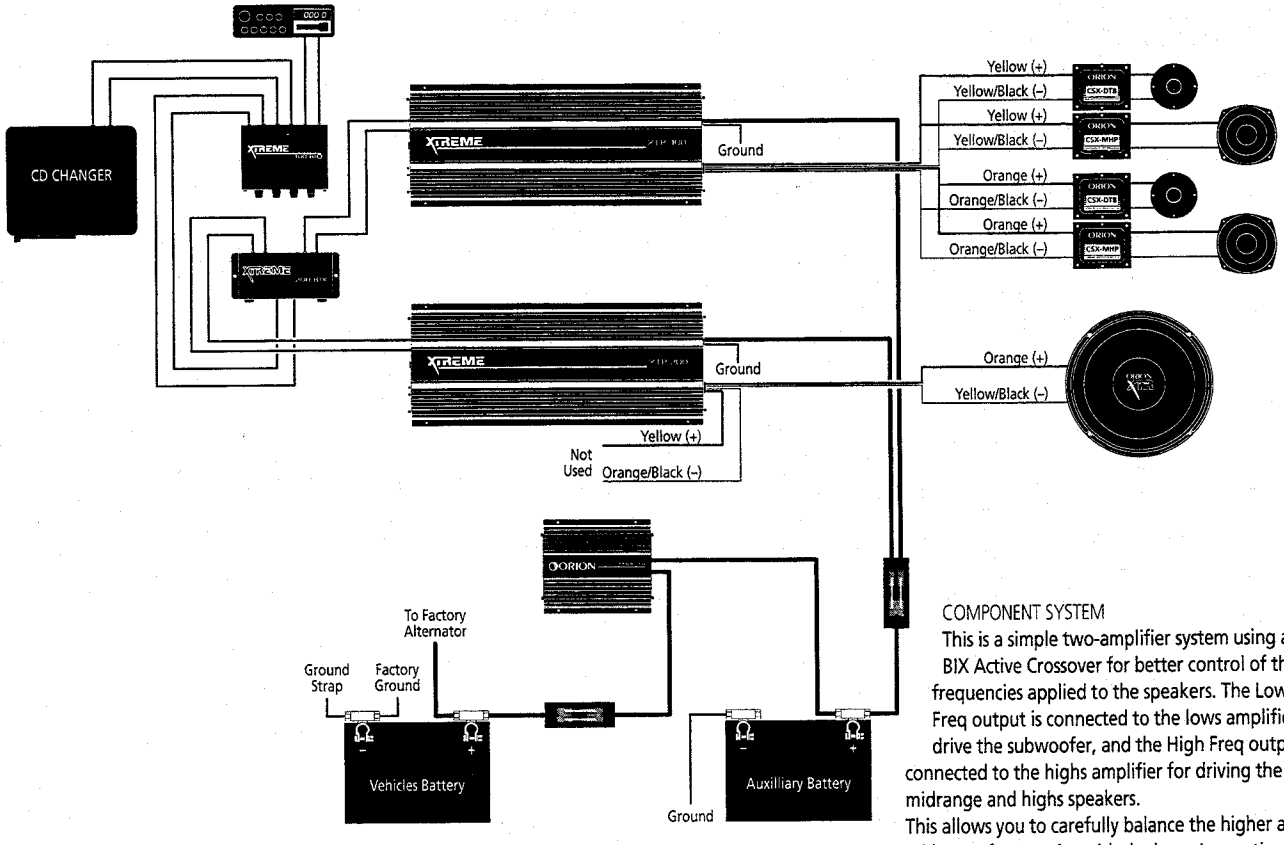


PHANTOM POWER (±15V) IS SUPPLIED TO ALL ORION ACCESSORIES BY THE AMPLIFIER THROUGH THE DIN CABLE.



AMPLIFIER WIRING

1. Disconnect the battery positive (+) lead before making any power connections.
2. Reinforce The Ground: Ground the battery negative terminal to a metal member to ensure an adequate ground. (see Detailed Power Connections)
3. Connect the power cable assembly directly to the positive (+) terminal on the battery. CAUTION: DO NOT connect amplifier to fuse box. Do not use a smaller gauge wire for the hot lead than coming out of your amplifier.
4. Use the supplied fuse within 18 inches of the battery.
5. Make sure that all connections are clean and properly secured. Failure to do so may result in damage to the components in the system.
6. Make sure wire enters the vehicle safely. Always use a grommet when penetrating metal.
7. Run wire through the vehicle in appropriate areas, try to avoid going near the fuse-box (it can radiate noise into your power wire). Never get power from the fuse-box, this will at best cause a noise problem and may in some cases cause electrical problems.
8. Once you have selected the mounting location, mount the amplifier using the four self-tapping screws provided. Tighten screws securely.
9. Power connections are made through power connector in end of amplifier. Remove connector and install wires in end and tighten screws, reinstall connector.



COMPONENT SYSTEM

This is a simple two-amplifier system using a 200 BIX Active Crossover for better control of the frequencies applied to the speakers. The Low Freq output is connected to the lows amplifier to drive the subwoofer, and the High Freq output is connected to the highs amplifier for driving the midrange and highs speakers.

This allows you to carefully balance the higher and midrange frequencies with the lows. In practice, overlapping the crossover point slightly results in smooth transitions of sounds delivered to the speakers. For example, the cutoff frequency for lows could be adjusted to 400 Hz. This would mean that all frequencies below 400 Hz would be passed to the lows amplifier at 100% power. The attenuation (reduction in power) is 12 dB which is a reduction in power of about 90%. An octave is a doubling of frequency so that a 800 Hz only about 10% of the power would go to the subwoofers. In this example, the high output would be adjusted to pass only frequencies above 300 Hz. This would give you about 100 Hz overlap. Then you could make slight adjustments to provide the sound that pleases you the most.

In a system utilizing a lows amplifier to drive the subwoofer, you would probably always want to use the summed mono mode as shown here. Use c the built-in equalization or an Orion accessory equalizer depends on personal taste. If the bass is "boomy" whether or not you use an accessory equalizer, the built-in equalization at the lows amplifier will improve overall performance.

TROUBLESHOOTING GUIDE

This section provides you with a catalog of amplifier symptoms and their probable causes and solutions. Before you consult this listing, make sure the vehicle's electrical system is working properly by verifying that other electrical items (e.g. headlights, windows, etc.) still function correctly.

SYMPTOM	PROBABLE CAUSE	SOLUTION
No Audio	Low or No Remote Turn-On connections	Check remote turn-on voltage at amp and head unit
	Blown Fuse	Replace with new fast-blow fuse
	Power wires not connected	Check butt splices or solder joints; check Ground and Battery connections
	Blown speakers or not connected	Use VOM or DVM to measure speaker coil impedance; check speaker wiring connections
Audio cycles on and off	Thermal Protection Circuits are properly shutting amplifier off each time it gets too hot	Check location for for adequate ventilation; check speaker wiring for a short to chassis
Distorted Audio	Input Sensitivity not set properly or damaged speaker cones	See Calibrating Input Sensitivity procedure and check each step; inspect each speaker for damage and repair or replace suspected component
	Low turn-on voltage	Refer to head unit owner's manual
Audio level low	Mute circuit is on	Check electrical system for low voltage; check ground connection
Audio lacks	Speakers wired with wrong polarity, causing cancellation of bass frequencies	Check polarity of wires from amplifiers to each speaker as defined by the system design
External fuse blowing	Incorrect wiring or short circuit	Refer to Electrical Installation and check keeps each installation step
Whining noise on audio with engine running	Amplifier is picking up alternator noise	Install an in-line noise filter on the head unit's power wire; check alternator diodes or voltage regulator for proper operation
Ticking noise on audio with engine running	Amplifier is picking up radiated spark noise	Check RCA audio cables routes; install an in-line noise filter on the head unit's power wire

SPECIFICATIONS

Model	XTREME 100	XTREME 200
Output Power @ 4 Ohms both channels driven 10Hz-100kHz	50 x 2	100 x 2
THD	0.005%	0.005%
Slew Rate	>500	>500
Output Damping	>1000	>1000
S/N With Balanced Input	112dB	112dB
Power Bandwidth	10Hz to 100kHz ± 5dB	10Hz to 100kHz ± 5dB
Current Consumption (@ 4 Ohms)		
Idle	1 Amp	1 Amp
Full Power	28 Amps, 13.6 Volts	28 Amps, 13.6 Volts
Size	20" x 8" x 3⅛"	20" x 8" x 3⅛"

Model	XTR BIX	XTR BIQ
Description	Self powered 2 way active crossover	Self powered 3 band Paragraphic Equalizer
Features	12 dB/Octave, high / low / bandpass	±12dB boost or cut
	Balanced inputs and outputs	Balanced inputs and outputs

WARRANTY & SERVICE

Orion Industries, Inc., warrants to the original purchaser only that all new Orion products shall be free from defects in workmanship and materials for a period of 90 days from the date of purchase, as shown in the dealer's original Bill of Sale. All Orion products are thoroughly tested by experienced technicians, to insure that they meet or exceed our performance specifications.

Orion agrees that defective products will be repaired or replaced (at our option) at no charge for labor or materials, provided that our inspection discloses that the defective products have not been subjected to misuse, negligence, or accident; damaged by modification, improper installation, or incorrect voltage; altered or repaired by other than Orion factory personnel, had the serial number or any other part altered, defaced or removed; or used in any way that is contrary to Orion's written instructions.

In order to obtain warranty service send the defective product, by prepaid freight, to Orion, together with a copy of the Original Bill of Sale. The product will be repaired or replaced, at our option, and returned freight prepaid, providing the unit is under warranty.

AUTHORIZED DEALER WARRANTY EXTENSION

Orion Industries, Inc. places great importance on the role of authorized dealers. Orion dealers are expertly trained to provide our customers with accurate information regrading our product. Orion will extend the warranty period of any Orion product if it has been purchased by an authorized Orion Dealer. When requesting service, a bill of sale must be presented to verify that the product was purchased from an authorized Orion Dealer. Please call Orion Industries, Inc. if you need to verify your authorized dealer's status. The warranty period for purchases made from an authorized Orion Dealer will be as follows:

Orion amplifiers, crossovers, signal processors	2 years
Orion XTR woofers	Lifetime
Orion Midrange speakers	1 year

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HIGH PERFORMANCE
CAR AUDIO AMPLIFIERS,
SIGNAL PROCESSORS
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